# Danthonia

vol. 2 no. 1 May 1993

NEWSLETTER OF THE AUSTRALIAN NETWORK FOR PLANT CONSERVATION

Royal Botanic Gardens
and National Herbarium
11 SEP 1993
LIBRARY

## Rare species conservation in Tasmania

*Alasdair Wells*

*Dept of Parks, Wildlife & Heritage, Tasmania*

The last few years have seen a dramatic increase in the profile of the conservation of rare and threatened plant species in Tasmania. The information of the Threatened Plant Species committee, primarily through the efforts of Stephen Harris [Parks and Wildlife Service (PWS)] and Andrew Smith [Royal Tasmanian Botanical Gardens, (RTBG)] has been a major reason for this. This Committee includes representatives from the different Tasmanian organisations involved with the conservation of rare and threatened plant species, and provides an ideal means for keeping the many organisations informed about the progress of the recovery process, and for encouraging cooperation in research or management.

Under the direction of Stephen Harris, many Flora Recovery Plans have been written, outlining the steps required to find out more about a particular species or community, or what actions are needed so that the recovery of a species or community can be ensured. ANPWS funding has allowed nine plans to be implemented, while some work on other species is being carried out under different funds.

This newsletter's namesake, *Danthonia popinensis*, has recently been found in a second small population in the midlands of Tasmania. Propagation by the RTBG has resulted in over 250 plants that will be used in various ways, including re-introduction to native populations to boost population numbers. Similarly, the endangered *Barbarea australis* has also been propagated by the RTBG, such that many plants are now available for various projects involving rare and endangered species.

The research phase of the recovery of *Phebalium daviesii* (of which there are only five known plants in the wild - it was, until recently, thought to be extinct!) has only recently begun, so there are not many details available yet. One point of interest is that the soil around the native plants, which occur on the edge of the George River on the east coast of Tasmania, has no seed of any species

➡ page 3

## Editorial

Having looked back over the newsletters since they began, it is obvious that the majority of the articles have come from Botanic Gardens and similar major organisations.

One of the main reasons the ANPC was formed was to cater for the innumerable community organisations that are working in some aspect of plant conservation. Excellent work is being done by these organisations, and much of it is unknown to the larger government and semi- government agencies. It is essential that they start hearing about them.

The Branches and Regions of the Society for Growing Australian Plants have become involved in many plant conservation projects, including providing assistance to government agencies with recovery programs for endangered species. While some of these recovery programs have been mentioned in the newsletters, the authors have been from the organising agencies. We would also like to promote the community groups that are actually carrying out much of the work. It would be most interesting to hear of the frustrations, joys and achievements that you get from the projects, the ways you believe they could be streamlined and any other aspects that you believe could be improved. It is only by raising these issues that we can begin to make participation in the projects more efficient and satisfying to all participants.

From the articles, it is also obvious that one state, Tasmania, has taken to integrated conservation like "ducks to water". We are sure (in fact we know) that Tasmania is not the only state that has a number of recovery plans under way and we need to hear more from others.

It is common for people to think that others will provide all the effort so that newsletters can be produced. This was not the guiding philosophy behind the Network. Your active participation is sought. The Newsletter now has a wide circulation, and it is important to let others know what you are doing.

We also wish to start a letters to the Editor section. If you feel there is something that you would like to comment on, then consider putting pen to paper . At the same time, we encourage all members to speak to one another. All communications do not and should not have to come through the National Office. The Network will only be successful if members talk to one another. A list of members is published in each issue, and a full address list is available from the National Office. Please use it to your own advantage.

## *Danthonia*

***Danthonia*** is published for the Australian Network for Plant Conservation by the Australian National Botanic Gardens
GPO Box 1777
Canberra ACT 2601
AUSTRALIA
Telephone (06) 250 9450
Fax (06) 250 9599

ISSN 1039-6500

## Advisory Committee

Dr. David Aldous
Dr. Tony Brown
Dr. Mick Brown
Mr. Geoff Farnell
Mr. Stephen Harris
Dr. David Kay
Ms. Margaret Moore
Prof. Henry Nix
Dr. Bob Parsons
Mr. Graeme Phipps
Ms. Catherine Potter
Ms. Rose Turner

## In this issue

Conservation in Tasmania page 1
Editorial page 2
Viewpoint page 4
Conservation at RBG, Melbourne page 6
Rare Blue Mountains plants page 8
Cataract Gorge page 9
Conifer Conservation page 10
Species Profile page 11
Conferences page 12
Membership page 15

## Rare species conservation in Tasmania

*continued from page 1*

whatsoever. Presumably flooding is washing away the seed, preventing regeneration from seed. The land on which the plants occur is privately owned, so measures are being considered to secure the land against inappropriate use to try and ensure the long term survival of the species.

A Flora Recovery Plan: Research Phase, has just been completed for the vulnerable *Epacris stuartii*, which will also benefit other taxa in the ill defined *Epacris tasmanica* group. Surveys for the endangered *Thesium australe* and the rare *Centrolepis paludicola* will be carried out soon, with reports on their distribution, conservation status etc. prepared by October. Work on the endangered *Centrolepis pedderensis* will also occur shortly.

A Recovery Plan: Management Phase for Lowland Temperate Grasslands is being prepared by Professor Jamie Kirkpatrick of the University of Tasmania, and should be completed shortly. Since there are so few remaining native grasslands left this Recovery Plan is seen as particularly important, especially since it will consider the communities as a whole, and not just concentrate on one species.

A recent taxonomic revision has eliminated one of Tasmania's vulnerable species, *Pratia irrigua*. It is now considered to be within the more common, and extremely variable *P. platycalyx*.

Two of the most successful plant recovery programs undertaken in Tasmania have been on *Carex tasmanica* and *Ranunculus prasinus*. Funding has enabled comprehensive surveys for *C. tasmanica* populations, resulting in many more being found. This, with propagation by the RTBG and reintroduction to help boost population sizes, as well as appropriate management, has meant that *C. tasmanica* has been downlisted to rare ahead of the schedule outlined in the recovery plan. Nevertheless, work will continue so that the populations of *C. tasmanica* remain secure. This in particular will involve the further development of an extensive education program that also incorporates rare species in general.

The endangered Tunbridge Buttercup, *R. prasinus*, has been successfully propagated by the RTBG such that reintroduction to native populations may occur this winter, a year ahead of schedule. Another native population has helped boost the numbers of plants in the wild, while overall numbers are being boosted by the planting of an ex situ population at the Township Lagoon Nature Reserve. This population has been very successful, occupying a habitat very similar to that of the native populations. Further plantings to increase the size of the population will occur in May, 1993, and will utilise the support of the local community and nearby schools.

Hence the conservation and effective management of rare and threatened species in Tasmania is progressing well, with only minor hiccups. There are many more rare and threatened species that need attention, but the information we are gaining on the procedures for the recovery of such species should enable us to proceed with even more efficiency and effectiveness.

# Botanic gardens seed lists — a curse to plant conservation?

*Mark Richardson*
*Australian National Botanic Gardens*

Throughout the world the disastrous impact of introduced species has been felt, with the rabbit and prickly pear providing graphic examples. In 1925 the latter covered 25 million hectares of Australia and was expanding at 100ha/hour (Leigh *et al*, 1984).

Most of such noxious species were introduced with good or at least innocent intentions. Many early introductions into Australia were made under the patronage of organisations such as the Acclimatisation Societies, which were keen to see the introduction of exotic plants and animals into new localities as familiar food plants, ornamentals and game.

In addition to, and often in association with, groups such as Acclimatisation Societies, botanic gardens have been intimately involved in the distribution of plant species around the world. An important and long standing means of dispersal has been the botanic gardens seed list or *Index Seminum*.

A botanic gardens seed list is a list of plant species for which a botanic gardens has seed for distribution. The lists vary from just a few tens of species to many hundreds. The seed itself may have been collected in the wild or from plants growing in botanic gardens. It is the intention of the *Index Seminum* system to make the distribution of seed between organisations as simple as possible. It merely requires the organisation submitting an order to list the corresponding catalogue numbers or in some cases circling those numbers on an order card accompanying the seed list. As a result it has been very successful and seed exchange is an important function of many of the world's botanic gardens. Seed not only goes to other botanic gardens but also to other research groups and organisations such as city councils.

In the past, restrictions on the movement of seed have largely been limited or nonexistent. Careful selection of species for the preparation of seed lists to avoid weed problems also appears to be virtually non-existent. Many of Australia's declared noxious weeds or plants known to be serious environmental weeds regularly appear in seed lists from many parts of the world. These include plants such as *Hypericum perforatum, Lantana camara, Ligustrum lucidum, Cytisus scoparius, Ulex europaeus and Vinca major*. McClintock (1987) also records the last three species among the aggressively invading exotics occurring in California.

The actual size of the weed problem is perhaps best appreciated in terms of money. In Australia alone, it is estimated that the problem costs around $3 billion annually in weed control and production losses. (Humphries, pers. comm.)

Even single species are having dramatic effects. Prickly Acacia (*Acacia nilotica*) which was introduced to Australia from the Middle East in the 1880's as a shade and fodder tree now occurs on about 7 million hectares and is dense over 1.5 million hectares. It is not only causing significant reductions in agricultural production but is also resulting in a serious depletion of natural grasslands. No long term control methods have yet been found (1). Rubber Vine (*Cryptostegia grandiflora*) was introduced into Queensland from Madagascar as an ornamental in the 1870's and is now widespread through central and northern Queensland. By 1989 about 350,000 square kilometres of Queensland had some infestation by the Rubber Vine. It is already costing the cattle industry about $10 million annually and is destroying large areas of Queensland's riparian vegetation. As for Prickly Acacia no long term control method has yet been found (1).

Examples such as Prickly Acacia and Rubber Vine are not uncommon and as further species become naturalised, those with invasive properties become obvious. Ross (1976) calculated that 5-6 species/annum have become naturalised in Victoria over the past century. Such species not only include those coming from outside Australia but also a number from within the country. Several species of Australian *Acacia* introduced into areas outside their natural occurrence have already become serious environmental weeds.

Many of the species that have become naturalised (and are weeds) are ornamentals and a significant proportion are available on botanic gardens seed lists.

Plants are by their very nature more easily distributed than animals. Once introduced into a new area they many be spread by a number of natural agents such as animals and wind. As a display in a botanic garden or park there is also the opportunity for visitors to "collect" and further distribute propagation material. Material coming via the botanic gardens seed list system may, on occasions, provide the starting point.

It is not advocated that the movement of seed between countries should be totally stopped. However, weeds are a major threat to many ecosystems, and any efforts to at least stop the problem getting worse must be employed. The abandoning of the botanic gardens seed list system as it currently exists would greatly assist.

Such a proposal poses an important question for many of the world's botanic gardens. If seed is not being held as part of an ongoing seed exchange program, then what is the purpose of the seed store?

The seed store at the Australian National Botanic Gardens is maintained primarily to hold propagation material for the living collections and conservation projects. Its secondary role is to provide seed for other organisations on request. This latter role has been recently examined in the light of the arguments presented in this paper.

As noted earlier, it is not proposed to cease providing any seed. However, it has been decided that requests will be considered more carefully. Warnings concerning potential invasiveness of introduced plants will be included with all seed and plant shipments. In extreme cases, requests for species reputed to be environmental weeds in certain environments will be refused if the request is not justified.

While botanic gardens are only one of the many ways in which weeds have been spread throughout the world and while there are other issues (such as stricter quarantine controls) that need resolution, it is important that the botanic garden community sets an example. There are already many organisations that are aware of the problems of environmental weeds and they require support.

The botanic garden community cannot on the one hand claim to be at the forefront of plant conservation and on the other continue to support a practice that may spell the destruction of millions of hectares of natural vegetation.

It is always easy to be clever in hindsight. We should take advantage of this and greatly modify our seed distribution practices before we contribute yet further to environmental weed problems. In the light of what we know, it would be irresponsible for us to do otherwise.

*REFERENCES*:

Humphreys, *et al..(1992)* Invasions. The Incidence of Environmental Weeds in Australia. Kowari 2, ANPWS Canberra.

Leigh, J, R. Boden and J Briggs (1984) Extinct and Endangered Plants of Australia. MacMillan, South Melbourne

McClintok, E (1987) The Displacement of Native Plants by Exotics In: Conservation and Management of Rare and Endangered Plants. T. Elias (ed) California Native Plant Society.

Ross, J. H. (1976) An analysis of the Flora of Victoria. Muelleria 3.

# Ex situ conservation at the Royal Botanic Gardens, Melbourne

*Andrew Batty, Royal Botanic Gardens, Melbourne*

The Royal Botanic Garden, Melbourne has been developing an ex situ conservation program for Victorian rare or threatened taxa in association with department of Conservation and Natural Resources (DCNR).

The Royal Botanic Gardens is targeting rare or threatened Victorian species (VROTS and ROTAP). Priority is given to species classified as endangered by ROTAP and difficult to propagate by conventional methods. The program is currently receiving support from Priority Victoria funding, the Australian Native Orchid Society, the Australian Orchid Foundation and from the Society for Growing Australian Plants-Victorian Region.

To achieve the most from the 12 months of Priority Victoria's support, a Steering committee has been established made up of represenatives from; Royal Botanic Gardens, LaTrobe University, National Parks Service , Flora Survey Unit, National Herbarium of Victoria and Australian Native Orchid Society. Goals have been set and are reviewed at regular intervals.

Establishing a policy for the RBG's involvement in the re-introduction of a species into the wild is also a major concern of the Steering Committee. This will assist land managers and contribute to policy guidelines for Action Statements and Recovery Plans.

Some of the rare or threatened plants ( included on a list compiled by the Steering Committee) to be propagated will have straightforward propagation procedures. In such cases these plants may be propagated by regional DC NR staff or with assistance from RBG. For example, *Eucalyptus yarraensis* is being propagated at the RBG and sent to regional staff for planting in a reserve.

Those species considered difficult to propagate, will be propagated at the RBG and sent to regional staff for planting in a reserve, e.g. orchids such as *Caladenia rosella*. Propagation requirements will be incorporated into a database that will contain such details as provenance, origin of propagation request, propagation protocols, outcomes and location of new material. The database is currently being developed at the RBG.

To date the program has been concentrating on the micropropagation of three endangered Victorian terrestrial orchids; *Caladenia rosella*, *C. robinsonii* and *C. calcicola*. Other orchids are being investigated where material is available,ed where material is available, including *Diuris punctata*, *D lanceolata* and *Pterostylis basaltica*. As the project is concentrating on symbiotic germination methods, the first step involves the isolation of mycorrhizal fungi from plant material. Initially, common species of orchids such as *Pterostylis nutans* and *Caladenia dilatata* were experimented with before moving on to rare and threatened species. Fungal isolates were obtained from *Caladenia rosella*, *C. oenochila*, *C. dilatata*, *C. calcicola*, *C. robinsonii*, *C. congesta*, *Glossodia major*, *Pterostylis nutans*, *P. cucullata*, *P. basaltica*, *Diuris lanceolata*, *D. punctata* and *D. fragrantissima* by methods learnt from Mark Clements at the Australian National Botanic Gardens and Kingsley Dixon at Kings Park. Although mycorrhizal fungi have been obtained from these species, germination trials will determine if they are capable of germinating orchid seed. Again, germination trials were carried out on common species such as *Pterostylis nana* and *P. maxima* to ensure methods are correct and contaminant free plates are produced. This is important as any contamination will overpower the mycorrhizal fungi and destroy seed. Germinantss of *P. nana* were produced indicating that our methods are correct. As a result germination trials have commenced on *Caladenia rosella, C. robinsonii, Diuris punctata*, and *D. lanceolata* and germinates have been obtained from all these species. Trials on other rare or threatened species will commence with the arrival of seed. The seedlings of *P. nana* will be used to trial various deflasking procedures. It is important for us to gain experience in deflasking, as it can be at this stage, when the seedlings are removed from sealed growth containers and are thus very susceptible to dehydration, that the greatest losses can occur.

The ultimate aim of the project will be to propagate sufficient numbers to increase the much depleted populations remaining in the wild and to establish specimens in the Royal Botanic Gardens collection. Where possible, reintroduction will be done in accord with Action Statements under the Flora and Fauna Guarantee Act or other appropriate management and recovery plans. Continued management and monitoring of the sites will be essential to determine the ultimate success of the work.

Although the project is concentrating on the symbiotic method outlined above, trials of an asymbiotic method will also be undertaken. This is where orchid seed is germinated in the absence of mycorrhizal fungi, but with the addition of various nutrients and other compounds. This method is generally not as successful as the symbiotic method, but is an alternative in those cases where populations are extremely low, (such as for *C. thysanochila* which has been reduced to two individuals), and the removal of specimens for fungi isolation would put populations at risk. Materials have only recently become available and trials are currently being carried out.

The project is also trialling various methods to break dormancy in species where normal germination procedures fail. Seed of *Santalum lanceolatum*, collected from the Warby ranges, was treated following a method from CSIRO using a growth hormone (gibberellic acid) to overcome dormancy. Initial trials were unsuccessful and seed failed to germinate after five months. However other methods involving different treatments, such as removing the seed coat and soaking in different concentrations of gibberellic acid have resulted in germinates being produced in under three weeks. Some of the remaining seed will be used to investigate these methods further while storing 30% of the original seed lot in the RBG seed bank.

The propagation of rare or threatened Chenopodiaceae is also a significant component of the RBG program. Many Chenopodiaceae, especially the Glassworts, have proved difficult in cultivation. The aim is to establish propagation and cultivation methods and to include Chenopodiaceae including rare or threatened species in displays at the RBG both at South Yarra and Cranbourne. We currently have material from a number of ROTAP listed species including *Halosarcia flabelliformis, Maireana cheelii* and *Sclerolaena uniflora*, and a number of VROT listed species including *Hemichroa diandra, Pachycornia triandra, Maireana excavata*, and *M. triptera*. Much of this material has only recently been obtained from a collecting trip to the Mildura region with assistance from Howard Brown. Trials of those species proving difficult to cultivate, are being established, involving experimentation with grafting onto appropriate root stocks and with seed germination and establishment. Previous grafting attempts have shown some promise.

Any questions or advice regarding the program can be directed to Andrew Batty, Rob Cross or Stephen Forbes at the RBG, Melbourne, Birdwood Ave, South Yarra, Victoria 3141

# Rare mountains plants identified by Royal Botanic Gardens, Sydney

Botanists of the Royal Botanic Gardens, Sydney, have an eye for observing unusual plants which many other people would dismiss as just another part of the bush.

Teresa James, Acting Identifications Botanist at the Herbarium, demonstrated the point while exploring the banks of the Grose River in the Blue Mountains recently.

An unusual heath plant attracted her attention. Teresa collected specimens which she identified at the Herbarium as the very rare *Epacris sparsa*, a species which had been overlooked for almost 180 years. Teresa first found the species last year on the rocky banks of the Grose River in Avoca Reserve, southwest of North Richmond. Her finding was confirmed by Jocelyn Powell, the expert on the heath family at the RBG. Teresa returned in May this year with Jocelyn and other Gardens staff when the heath was flowering and confirmed the identification in the field. A subsequent trip was made with John Benson, RBG, Senior Ecologist, and RBG photographer, Jaimie Plaza. John obtained details for listing the plant on the rare or endangered list while Jaime took many photographs of the plant in its habitat.

The species was first described in 1810 by the British botanist, Robert Brown, from his collections in the Grose Valley during his expedition to Australia a few years earlier. However, later efforts to find the plant were unsuccessful.

It was not included in the 1916 Census of NSW Plants because botanist, J.H. Maiden and E. Betche, considered its existence doubtful since their searches for it were unsuccessful.

Local Blue Mountains residents, L.H. Williams and D. Perrin, collected some specimens below Faulconbridge in 1970, but the significance of the specimens was not recognised. The recent location of the plant might provide clues to the difficulty of finding it over the years and help preserve its habitat in the future. The species grows only in a small region of the Grose River. Its habitat is very damp areas on the edge of the river in shale beds between sandstone rocks and it could at times be damaged by floodwaters.

The plants at Avoca are in a council reserve frequented by bushwalkers and picnic groups and are not protected. In a more recent expedition the population upstream at Faulconbridge was located. This is protected within the Blue Mountains National Park, but the population is smaller than in Avoca Reserve. It is hoped that management of Avoca Reserve will be sympathetic to the species.

By coincidence, Dr Barbara Briggs and Barbara Wiecek are at present studying two other rare species from the Blue Mountains; one was first found by Robert Brown in the same part of the Grose Valley as the *Epacris*. This species, now known as *Veronica brownii*, was not found again nor accepted as a distinct species until recently. It is conserved in the Blue Mountains National Park and its main occurrences are in a region that was quite unexplored when Brown made his collections.

The other species, soon to be described as a *Parahebe*, occurs in the Southern Blue Mountains. It appears to have been collected by Barralier in 1802 when attempting to cross the mountains and the specimens were shown to Brown. It will soon be named botanically, 190 years after its first discovery.

*(Taken from the RBG Gazette of August 1992).*

# Australian Network for Plant Conservation

GPO Box 1777
Canberra ACT 2601
AUSTRALIA

Telephone 06) 250 9450
Fax 06) 250 9599

## MEMBERSHIP FORM

1993

Name of Agency/Individual……………………………………………………………………

Postal Address……………………………………………………………………………

……………………………………………………………………………………………

……………………………………………………………………Postcode……………………

Phone Number(s)…………………………… Fax Numbers(s)……………………………

Contact Person……………………………………………………………………………

MEMBERSHIP FEE STRUCTURE

| | |
|---|---|
| Federal, State or Local Government agencies, corporations & Industry Associations | $200 p.a. |
| Other Non-Profit Organisations | $50 p.a. |
| Interested Individuals | $30 p.a. |

PAYMENT

Membership Fee: $………………
Donation: $………………

I enclose my cheque/money order for : $………………

**Please make cheques payable to the Australian Network for Plant Conservation.**

***Do you know of anyone who would be interested in becoming a member of the ANPC? If so, please provide us with their name and address or you may even wish to consider a gift membership!***

---

Established by Australian National Botanic Gardens – a Division of Australian National Parks and Wildlife Service

# Proposal for work in the Cataract Gorge, Launceston

The Northern Tasmanian Group of the Society for Growing Australian Plants is to undertake a project in the Cataract Gorge working in conjunction with the Launceston City Council.

The aim is to remove exotic plants and weeds from the area bound by the swimming pool, First Basin and track to the suspension bridge and to replant this area where necessary.

The area was chosen as it has a number of endemic plants, many that are relatively rare and found mainly on the east coast of Tasmania. It is unusual for them to be growing in the Gorge. It also has a high tourist profile, being easily viewed from the track and the suspension bridge.

The plants that are to be removed are: Willows, Hawthorn, Gorse, Blackberrry, Ivy, Cotoneaster, Fruit Trees, Honeysuckle. Recommendations given by Ken Yound from the DPI are being considered as well as information from the Clarence Council, who have undertaken successful programmes in eradicaion of these plants in their municipality.

It has been suggested that the spraying be done in spring and a follow-up be done 6 months later. The work was done in November 1992 with the follow-up work to be done in May 1993.

The plan is to employ the Australian Trust for Conservation Volunteers to work under the guidance of our members. They have already been employed by the Council in the past and it has been successful.

The Society members will provide supervision and assistance and indicate plants not to be touched. When the eradication is completed, filler planting will be done by the Society. The plants used will be propagated by the members from seeds or cuttings taken from the area in the gorge which is to be cleaned.

The vegetation of the rocky area between the pool and the suspension bridge should be preserved, since it is an assemblage of unusual and interesting plants, including -

*Callitris oblonga,*
*Calytrix tetragona,*
*Spyridium ulicinum*
*Epacris exserta*
*Phebalium squameum var. retusum*

It also includes beautiful, more common plants like

*Prostanthera rotundifolium*
*Leucopogon spp.*
*Hakea microcarpa*
*Hibbertia spp.*
*Grevillea australis*
*Notelaea ligustrina*
*Micrantheum hexandrum*
*Hymenanthera dentata*

Some of these occur also on the rocks above the lip of the Basin and on the Giants Grave. Many of them continue up the river bed towards Trevallyn Dam but nowhere are there so many species together.

The hill below Denison Road overlooking the Basin, like Cataract Hill, carries a fine, almost pure stand of Sheoak. This is worth preserving as a back-drop to the Basin, and as a contrast to the greener trees of the Cliff Gounds, with its exotics and eucalypts. Again, the rocky site and exposure to sunshine give the Sheoak an advantage over other plants. Boneseed is troublesome.

*(This article was taken form the Tasmanian Society for Growing Australian Plants Newsletter, December, 1992.)*

# The Conifer Conservation Programme

The Royal Botanic Garden, Edinburgh has been developing an extensive Conifer Research and Tree Conservation Programme over the last twenty years. In April 1991, the Conifer Conservation Programme was launced as an important national and international initiative in ex-situ conservation. This programme, funded by the Sainsbury Family Trusts, is concerned with the conservation of temperate conifers, mainly from the Pacific Rim.

The programme is establishing a network of arboreta growing rare tree breeding populations in the United Kingdom, Ireland and abroad. It aims to link in with in-situ conservation work already being carried out in other countries. Joint programmes have been established in Spain (*Abies pinsapo*), Chile (*Fitzroya cupressioidides*) and are developing in Mexico (for several species).

Plantings are structured to represent a broad genetic base from across the geographical range of each species. To some extent they will include the non-coniferous associated species. These arboreta will be used as future breeding populations and source material to assist re-introduction an re-afforestation in the wild.

They will also serve as long term resources for scientific research into conifer biology and ecology, developing such research with the countries concerned. The information gained from initial and subsequent studies will provide a centralised database for scientists and conservationists.

Worldwide, the conifer specialist group of the I.U.C.N. lists more than 300 taxa of conifers (species, sub-species and varieties) suspected of being of possible conservation concern. The list is intended to reflect a biological basis for threats to conservation (such as localised or island populations and species that have already suffered genetic erosion) rather than what is or is not conserved in national parks or other similar areas. It is under constant review with species being upgraded or downgraded, added or removed altogether as more information becomes available.

In Australia significant numbers of endemic conifer species are protected through National Park systems and World Heritage Areas e.g. Queensland and Tasmania. Some, for example the *Athrotaxis* species and *Lagarostrobus franklinii*, have already been intensively studied and accurate, in depth scientific information about their biology and ecology is widely available. *Microstrobos fitzgeraldii* is the subject of an innovative ex-situ program involving the NPWS, the Mt. Annan Botanic Garden and community groups. Although such ex-situ conservation is primarily concerned with saving rare species, it would be wrong to assume that these are the only subjects which might benefit from independent arboretum culture as one of the targets is to conserve those genotypes of species which are becoming lost through the activities of people. In Tasmania for example, did anyone save those genotypes of *Lagarostrobus franklinii* which were lost to flooding? International cooperation is extremely important in preventing this. An example of this is donation of plants by the ex-situ *Microstrobos fitzgeraldii* programme to the Conifer Conservation Programme to maintain in their programme.

The Conifer Conservation Programme is interested in gathering further views about the conceptual value of this programme and how it might be best used to integrate with local in-situ conservation strategies and forming links, where practical and useful, with such activities.

Programme Director: Dr Chris Page

Programme Manager: Martin Gardener

Contact: Philip Thomas, c/o Conifer Conservation Programme, Royal Botanic Garden, Edinburgh, Inverleith Row, EH5LR Scotland

SPECIES PROFILE

# The Smooth-leaved Davidson's Plum

*Russell Costin, Limpinwood Gardens Nursery*

In late spring 1990, after talking to Alex Floyd as to their exact whereabouts, I collected some cuttings from one of the few wild populations of *Davidsonia* sp. at Hogan's Scrub Reserve. This is a privately owned uncleared remnant patch of subtropical rainforest growing on poor metamorphic soil between North Tumbulgum and Bilambil.

It lies on the north-eastern ridge of the Mt Warning caldera, close to the Qld border, where the crater wall starts dropping toward the ocean.

As most springs here are fairly dry, there was not much fresh growth, but I obtained about 2 dozen tip cuttings from several plants. Unlike the small tree *Davidsonia pruriens*, this species. is a small, relatively bushy undershrub.

This remnant containsf about 10 plants within an area about 4m x 4m right beside the road through the Reserve. It is not a very secure position or population. As the plant is reputed not to set viable seed, they may all be root suckers from one plant, and, as far as I know, this group of plants has not been propagated from before.

The material was hard and fairly woody, the leaves almost eaten to shreds and covered with various insects. After cleaning it up as much as possible, I used a four to five node tip cutting. These were dipped in 16000 ppm IBA and placed in perlite/peat 3:1 mix in separate 50mm tubes. They were drenched with Benlate and Aliette, then placed under light/humidity sensitive misting in a ventilated igloo with 50% shade. After about 3 months I obtained roots on nine cuttings. The root system is very fine and almost transparent. These were grown on and planted out in sunny but sheltered nooks on a red soil ridgetop in our Botanic Gardens in the foothills of the MacPherson Range in northern NSW. All are growing steadily and yielding some cutting material now.

The plant has a lot of ornamental appeal as well as botanical and scientific interest. New growth is shiny dark red, with very attractive compound leaves up to 30cm long, becoming eventually dark green. The plant has a bushy dense shrublike growth habit and appears to be reasonably hardy and would make an excellent indoor pot plant.

The first plant grown was given to John Wrigley and though small to start with, is slowly getting away. The next two are earmarked for Alex Floyd and the Coffs Harbour Botanic Gardens where their only specimen growing well in the rare or endangered section was ripped out of the ground and stolen. This sad vandalism highlights the dilemma of naming and showing the public endangered species. They need to be shown to gain support but there is a risk involved. Perhaps one specimen should be named and shown, and the others grown away from grasping hands, for security.

I would like some of the other young plants to go to secure homes in Botanic Gardens etc. and spread it around in cultivation. This is a beautiful shrub, but it is critically endangered. It would be good if NSW Parks and Wildlife could re-establish some in the wild again in suitable safe spots too.

This project has taken a few years but now that I have clean healthy stock plants eventually quite a few more can be grown.

While I'm on the bandwagon, this raises a couple of other important points regarding rare or endangered species and their cultivation. The collection of seed or cutting material from the wild of such a species should ideally be a one -off e.g. I will never again touch the wild *Davidsonia* plants. I don't need to now and besides, results from propagating cultivated plants are very much superior to the wild.

This fact should affect the argument put up by some well meaning people and by some National Parks Services about allowing collection of propagation material from rare species in protected areas for cultivation. It is claimed that the plants would be damaged or destroyed. I have intoduced species into cultivation from as little as two cuttings, in some cases one.

Supervised access should not pose a problem. Or we can keep them secret and leave them in the wild until a human or natural disaster overtakes the population.

A uniform mechanism should be set up to bring all species into cultivation and this is one of the things I hope the ANPC and its enlightened views will achieve.

For more information contact: Russell Costin, Limpinwood, Gardens Nursery Limpinwood Valley, Via Murwillumbah

## CONFERENCES

# THE GREAT PLAINS CRASH

## A conference on the Grasslands and Grassy Woodlands of Victoria

*John Arnott, Melbourne Zoo*

October 3 and 4 1992. Hosted by the Victorian National Parks Association and the Indigenous Flora and Fauna Association.

The Great Plains Crash: a conference on the grasslands and grassy woodlands of Victoria was attended by 280 people representing a variety of groups and interests. Attending and speaking were many of the leading authorities on the conservation and management of native grasslands in Victoria.

This was an appropriate title for a conference to discuss grasslands and grassy woodlands in Victoria as these grassy ecosystems have experienced unprecedented declines over the past 150 years . Dr Jamie Kirkpatrick, University of Tasmania, equated the decline of native grasslands in Victoria as the most significant loss of any Australian ecosystem. Indeed the statistics would appear to support this.

Prior to European settlement native grasslands and grassy woodlands occupied around 36% of the states land area. It is now estimated that 0.5% of this cover remains. One third of Victoria's threatened plants, birds and reptiles occur in native grasslands and almost all of the 21 species of mammal extinct in Victoria occurred in these grassy ecosystems.

However, the conference was not all about measuring these declines *ad nauseam.* It provided a forum to discuss and debate strategies and methods for the conservation of remnant areas in Victoria and offered a high standard of speakers and diverse range of topics and perspectives.

Dr Bob Parsons, LaTrobe University, in the introduction to the conference, detailed some of the processes threatening temperate grasslands communities. Dr Parsons drew comparisons between Victorian grasslands and other temperate grasslands overseas which have experienced similar declines. Dr Peter Bridgewater, ANPWS, also discussed grasslands in terms of an international conservation issue, reflecting on the fact that only 0.09% of Australian's grasslands are suitably protected in conservation reserves. Dr Bridgewater also discussed the work undertaken in ex-situ plant conservation at ANBG and the national focus on plant conservation of the ANPC.

Dr Nevelle Rosengren, La Trobe University, provided an introduction to the geology and evolution of Victoria's grasslands regions. This coupled well with Roger Jones, Museum of Victoria, whose topic was the climate and vegetation history of these regions.

Keith McDougall, Habitat Works Pty Ltd, discussed the range of different grassland communities within Victoria, detailing key plant species for each. Amongst those discussed were Victorian volcanic plains grasslands, (3 types), Wimmera grasslands, northern plains grasslands, alpine and coastal dune grasslands. He stressed the need for each of these distinct communities to be managed to meet their individual requirements. Geoff Carr, Ecological Horticulture Pty Ltd, provided a more detailed description of the vegetation communities on the Victorian volcanic plain and analysed their floristics.

"Koorie use and management of the plains", presented by Dr Beth Gott, Monash University, provided a fascinating insight into Koorie life on the plains. Dr Gott described and discussed the mosaic patches of vegetation produced as a result of the Koorie's burning practices and detailed a number of important staple foodplants. The effects of fire, absence of fire and other management factors were discussed in a paper by Ian Lunt, La Trobe University. Ian drew together observations that he has made of remnant grassy woodlands on the Gippsland plains.

Community Initiatives, Invertebrate Surveys, Patterns of Settlement, Land of Wildlife and Strategies for Grasslands Conservation were amongst the other topics covered in the conference proceedings.

The conference included 3 separate workshop sessions each of special interest to a wide range of individuals, groups and organisations. The workshop topics were:

* Management Plans and Strategies for Grasslands conservation

* Protecting Flora and Fauna: Viable strategies for conservation.

* Indigenous Plantings: Restoration myth or Last Chance for Survival.

An important feature of this conference was an open forum to draft a "Conservation Declaration for Native Grasslands and Grassy Woodlands in Victoria". The declaration was intended as an accurate reflection of the workshop sessions, papers and general opinion of those attending the conference.

Proceedings of the conference will be published in "Advances in Nature Conservation" (the Journal of the Indigenous Flora and Fauna Association), vol 2, no 1. It is anticipated that this will be available in the first half of 1993. For further information contact VNPA on (03) 650 8296 or IFFA on (03) 867 4173.

## First cool temperate forest conference, Deloraine, Tasmania

*Alasdair Wells, Botanist*

The conference was mainly attended by individuals and Australian NGO's with a few international representatives. Professors David Bellamy and Jamie Kirkpatrick were keynote speakers. The conference was primarily a strategy meeting for forest conservation.

Many speakers outlined the magnitude of forest clearing in the cool temperate regions of the world, highlighting the biological dilemma of forest clearing.

The following points summarise opinions and topics of discussion at the conference.- The problems associated with practices such as forest clearingwere outlined as:

* loss of old growth forest ecosystems;

* loss of habitat for flora and fauna diversity;

* reduction of wilderness areas

* Alastair Graham outlined where forest products were being consumed around the world, and hence where the conservation movement should be targeting its effort.

One area of concern is the increasing demand for higher grade paper by third world countries as they develop. Pressure to increase demand for lower grade/recycled paper was seen as necessary. In the developed world, Japan was not seen as a major "enemy" as they supply 50% of raw fibre from their own resources, and have a major recycling program in place. Nevertheless, it was suggested that higher prices for raw fibres should be charged to recoup the true environmental costs of logging. Also, increasing the price of native timber would make plantations much more viable. An OPEC style organisation was suggested, to set wood prices.

The USA was seen as a more important target for conservationists as they are the greatest consumers of wood per capita in the world, and have a very inefficient recycling program.

Europe too is a major market for wood, without producing much themselves. However, places like Denmark have very low consumption rates per capita and should be used as a role model for other developed countries. "Ecolabelling" of ecologically sound products is recommended, particularly for European countries,together with the introduction of tariffs on native forest timber to encourage the preferential importation of plantation timber.An economist specialising in forestry, Judy Clark, believes that native forest logging will be phased out in Australia within 5 to 10 years, and be replaced completely by plantation harvesting. She believes that the government should be providing subsidies to industry to assist them in establishing the new technology required for plantation harvesting and processing, rather than supporting native forest logging.

She also believes that domestic demands can be met by the existing plantations when they come on line in the next five years or so.

Therefore the aim of the conservation movement is to save those areas of native forest which still exist before plantations come on line.

There is an urgent need to establish rules relating to plantation establishment and management, as plantations can have many associated environmental problems. Issues such as weeds, management of pests, diseases and other values within plantations including native flora and fauna habitat, were largely unaddressed at the conference.

## CULTIVATING CONSERVATION -- Integrated Plant Conservation for Australia

ANPC's First National Conference

Locality: Hobart, Tasmania

Date: 5-9 December, 1993

Attendance: Members and non-members from Australia, SE Asia and SW Pacific

Following the second meeting of the ANPC Advisory Committee in May this year, plans for the ANPC's first national conference are proceeding with the first program and registration forms to be sent out shortly.

The purpose of the Conference will be to develop the guidelines necessary to continue the integrated conservation of Australia's flora. It will aim to assist in the elimination of any unnecessary duplication of work and improve the movement of information and plant material. It will publicise the excellent work already being done by ANPC members, and allow their experience and knowledge to be passed on to others.

The Conference will be a mixture of papers and workshops with an emphasis on the latter. The subjects to be covered will include the endangered species collection, germplasm storage, program priorities, integrated conservation efforts (including the species recovery process and reintroductions), databasing, and education.

## THE AUSTRALIAN NETWORK FOR PLANT CONSERVATION MEMBERSHIP LIST

The date (1993) indicates that the member has joined or renewed for this year.
Addresses and names of contact persons are available from the National Office.

Botanic Gardens of Adelaide, SA
Albury Botanic Gardens, NSW (1993)
Alcoa of Australia Ltd.; WA
APPM Forest Products; Tas
Arid Land Botanic Garden, SA (1993)
Association of Societies for Growing Australian Plants (1993)
Australian Association of Bush Regenerators (1993)
Australian Forestry Council, Tas
Australian Mining Industry Council, ACT
Australian National Botanic Gardens, ACT (1993)
Australian Tree Seed Centre, CSIRO, ACT
City of Ballarat Botanic Gardens
Mr Stephen Barry (1993)
City of Berwick, Vic
Dr Robert Boden, ACT
Botanic Gardens Conservation International; UK (1993)
Botanical Preservation Corps ; USA
Dr Barbara Briggs, NSW (1993)
Dr AHD Brown; ACT (1993)
Mr Ray Brown; NSW
Brunswick Valley Heritage Park, NSW
Miss Dulcie Buddee, NSW (1993)
Ms C Burke Qld
Mr R Burns; Tas
Burrendong Arboretum Trust; NSW
Dr G Burrows; NSW
Center for Plant Conservation; USA (1993)
Irene Champion, Qld (1993)
Anne Coates; WA
Coffs Harbour City Council; NSW (1993)
CSIRO, Division of Plant Industry; ACT
Conservation Commission of the Northern Territory (1993)
Deakin University, Rusden Campus Library, Vic
Mr John Delpratt, Victoria (1993)
Department of Parks Wildlife and Heritage, Tas (1993)
Mr S Donaldson; ACT
Dulegal Arboretum; NSW
Rodger Elliot; Vic
Eurobodalla Botanic Gardens, NSW
Elizabeth Fenton, Vic (1993)
Flecker Botanic Gardens; Qld (1993)
Friends of the North Coast Regional Bot. Garden; NSW (1993)
Friends of the Points; Vic (1993)
Mrs E George; WA (1993)
George Caley Botanic Garden; NSW
Ms. L Gilfedder; Tas
Gladstone Tondoon Botanic Gardens; Qld (1993)
Roger Good, NSW
Mr David Gordon; Qld (1993)
Dr Janet Gorst; Tas (1993)
Joanne Green; NSW
Scott Green: RBG Kew, Wakehurst (1993)
Greening Australia (ACT)
Greening Australia (NSW)
Greening Australia (Vic)
Greening Australia (WA) (1993)
Mr Barrie Hadlow; ACT (1993)
Mrs. Jan Heisler; NSW
Ms Laurel Hemmings, Vic (1993)
Dennis Hilder, WA
Mr Peter Hind, NSW (1993)
Honiara Botanic Gardens; Solomon Islands (1993)
Mr. Mark Hoult; NT
Hunter Region Botanic Gardens; NSW
Ms Susan Johnston, ACT (1993)
Kebun Raya Indonesia (1993)
Kingfern Natives; NSW (1993)
Kings Park and Botanic Gardens; WA
Ms Beryl Langsford, WA
Limpinwood Gardens Nursery, NSW (1993)
Mr. WJF McDonald; Qld
Mr. David Mason; NSW (1993)
Mr. Stephen Mattingley (1993)
Mt Coot-tha Botanical Gardens; Qld (1993)
Myall Park Botanic Garden, Qld (1993)
National Botanical Institute, South Africa (1993)
Lex Nieboer (1993)
Norfolk Island Botanic Gardens
NSW National Parks & Wildlife Service, Queanbeyan (1993)
NSW National Parks & Wildlife Service, SE Region (1993)
Olive Pink Flora Reserve; NT
Dr. Bob Parsons; Vic
Mr Brian Quinn, Vic (1993)
Rare Plant Consortium, Canada (1993)
Mr. Brett Robinson NSW
Royal Australian Institute of Parks and Recreation, ACT
Royal Botanic Gardens, Melbourne, Vic
Royal Botanic Gardens, Sydney; NSW
Royal Tasmanian Botanical Gardens; Tas
Mrs Esma Salkin; Vic (1993)
Mr Garry Sankowsky; Qld
Mr. Lindsay Sell; NSW
SGAP - Canberra Region Inc
SGAP - Dryandra Study Group (1993)
SGAP - East Hills ; NSW
SGAP - Grampians Group; Vic
SGAP - Grevillea Study Group (1993)
SGAP - New England; NSW

SGAP - New South Wales Ltd.
SGAP - Newcastle; NSW
SGAP - North Coast; NSW (1993)
SGAP - North Shore; NSW (1993)
SGAP - North West; Tas (1993)
SGAP - Pine Rivers; Qld (1993)
SGAP - Queensland Region (1993)
SGAP - Redlands; Qld
SGAP - South Australia Region
SGAP - South West Slopes; NSW (1993)
SGAP - Tasmania Region (1993)
SGAP - Victorian Region (1993)
Ms Marilyn Smith, NSW (1993)
Stony Range Flora Reserve, NSW
Sunraysia Oasis Botanical Garden, NSW (1993)
Suva Botanical Gardens; Fiji (1993)
Dr. J Tarran; NSW
Mr. Philip Thomas, RBG Edinburgh (1993)
Threatened Species Network (NT), Northern Territory (1993)
Townsville Botanic Gardens; Qld (1993)
Tumut Ecology Reserve Trust; NSW
Ms. R. Turner (1993)
Vailima Botanic Gardens; Western Samoa (1993)
VCAH Library, Burnley (1993)
The Waite Arboretum, SA
Mr. Chris Ward; NSW
Wildflower Society of Western Australia (1993)
Wildflower Society of WA - Armadale Branch
Wildflower Society of WA - Mandurah Branch (1993)
J & A Willinck, NSW (1993)
Mr. John Wrigley; NSW (1993)
WorldWide Fund for Nature Australia

## THE AUSTRALIAN NETWORK FOR PLANT CONSERVATION

Just over 200 hundred years of European settlement has had a severe impact on Australia's natural ecosystems. The current estimate of extinct plant species in Australia is more than 70, with more than 175 species endangered and another 3200 under some degree of threat.

Fortunately, the community is becoming more conscious of the need to protect global environments from the threats facing them. It is universally recognised that the preservation of habitat is the most desirable means of conserving the biological diversity of all organisms. However, some of these organisms are so threatened that the only means of saving them will be to secure them outside of their natural habitat until suitable places can be located to establish them. Some may have to be maintained permanently in ex situ collections. This complementary role for ex situ conservation is now being referred to as integrated conservation.

In March 1991 the Australian National Botanic Gardens (ANBG), with support from the Federal Endangered Species Program, held a conference entitled "Protective Custody". The aim of the Conference was to involve organisations and individuals interested in plant conservation and to encourage co-operation between these organisations by the formation of a co-ordinating body for plant conservation. Delegates from Britain, Fiji, New Zealand, Indonesia, the Solomon Islands, the United States of America and Western Samoa also attended the Conference.

During the Conference, consensus was reached that the Australian region does need a body to co-ordinate integrated plant conservation . A proposal for the formation of the Australian Network for Plant Conservation (ANPC) was later produced and widely accepted.

The ANPC draws its membership from throughout Australia (in both public and private sectors) and has a national office at the Australian National Botanic Gardens. It will be the co-ordinating organisation for integrated plant conservation in Australia. It will :

i) establish a multi-site National Endangered Species Collection for use in the practical recovery of endangered species as well as for research, education, display and general horticulture.
ii) locate and bring together information on integrated plant conservation activities in Australia and provide access to this information for members.
iii) assist in the national co-ordination of plant conservation projects to avoid duplication of effort.
iv) provide advice to members and promote plant conservation activities.
v) communicate on a regular basis by means of a Newsletter.
vi) organise workshops, training courses and conferences.

For further information on the ANPC please contact the Curator, Australian National Botanic Gardens, P.O. Box 1777, Canberra ACT 2601.